Glenn LeBlanc

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Experience

Amazon Web Services - Software Development Engineer, Aurora Limitless **Sep. 2022 - Present**
Technologies: C++, C, Rust, Java, PostgreSQL, Protobuf, AWS RDS **Palo Alto, CA**

- Developed modified query planning and execution inside the PostgreSQL engine via extension hooks to support creating sharded and reference tables for Aurora Limitless, a greenfield distributed database
- Designed and implemented end-to-end locking solution spanning control and data plane for database consistency during shard splitting
- Performed RCA on various bugs and drove resolution across dependent teams

Nauto - Data Science Intern **Feb. 2022 – Jun. 2022**
Technologies: C++, Python, TensorFlow, SQL, PySpark, Databricks, Kalman Filtering **Palo Alto, CA**

- Tuned on-device anomaly detection algorithms to increase test F1 scores by 30%
- Implemented and validated TensorFlow vehicle dynamics model to port C++ GPS & IMU sensor fusion algorithm into cloud model
- Developed logging and data analysis software to interface with commercial and in-house GPS and IMU devices

UC Berkeley - Research Intern, Bay Area Neutron Group **Nov. 2020 – Aug. 2021**
Technologies: C++, ROOT, LaTeX, Nuclear Physics **Berkeley, CA**

- Coauthor for paper *Modeling ionization quenching in organic scintillators*
- Contributed to large-scale C++ data analysis framework to develop Monte-Carlo fitting routine solving longstanding (3+ years) problem group had faced concerning biased model fitting using least squares
- Presented work at 2021 IEEE Nuclear Science Symposium

KBR - Research Intern, NASA Quantum AI Laboratory **Jun. 2019 – Aug. 2019**
Technologies: Python, NumPy, SciPy, TensorNetwork, Pytest, TravisCI, Quantum Algorithms **Moffett Field, CA**

- Developed package for parameterized tensor network contraction to classically simulate quantum algorithms

Education

UC Berkeley **Dec. 2021**
BA in Physics and Data Science **GPA: 3.8/4.0**

- Relevant coursework: Software Engineering; Algorithms; Data Structures; Data Science; Decision Theory; Machine Learning; Engineering Optimization; Probability Theory; Semiconductor Circuits; Advanced Physics Laboratory; Quantum Computing

Teaching

Teaching Assistant **Jun. 2020 – Aug. 2020**
Berkeley edX **Berkeley, CA**

- Spearheaded reopening of massive open online course in quantum computing with over 40,000 enrolled students
- Assisted students in interactive forum and hosted office hours

Student Instructor **Aug. 2019 – Dec. 2019**
UC Berkeley **Berkeley, CA**

- Developed and managed an introductory course in quantum computing with 17 enrolled undergraduate students
- Presented weekly lectures and prepared and graded assessments

Projects

Quantum Simulation Playground | *Julia, TravisCI, Git* **Apr. 2021**

- Implemented tensor train decomposition for efficient compression of high-rank tensors with limited entanglement entropy; applications in condensed matter physics and machine learning
- Implemented time-evolving block decimation for exponentially faster simulation of 1D quantum systems

Quantum Partial Search | *Python, Pyquil, Forest API, Git* **Apr. 2019**

- Implemented a variation of Grover's algorithm for unstructured search in sublinear time using a quantum processor

Gitlet | *Java, Git* **Dec. 2018**

- Architected and implemented a mini version-control system inspired by Git
- Implemented branching, merging, staging, and committing features

Technical Skills

- **Languages**: C++, C, Rust, Java, Python, PostgreSQL, JavaScript, Julia
  Libraries: Protobuf, AWS SDK, Guice, Lombok, NumPy, SciPy, Pandas, Matplotlib, TensorFlow, PySpark
  Developer Tools: AWS (RDS, IAM, DynamoDB, EC2, S3), Git, GDB, Databricks
  Other: AWS Console, Excel, Kalman Filters, Distributed Systems, Database Internals, Design Patterns